AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows.

Please replace the paragraph that begins on the bottom of page 8 and ends on page 9 with the following amended paragraph.

The transposon-based vectors of the present invention include a transposase, operably-linked to a first promoter, and a coding sequence for a protein or peptide of interest operably-linked to a second promoter, wherein the coding sequence for the protein or peptide of interest and its operably-linked promoter are flanked by transposase insertion sequences recognized by the transposase. The transposon-based vector also includes the following characteristics: a) one or more modified Kozak sequences ~~at the~~ 3' ~~end~~ of the first promoter to enhance expression of the transposase; b) modifications of the codons for the first several N-terminal amino acids of the transposase, wherein the nucleotide at the third base position of each codon is changed to an A or a T without changing the corresponding amino acid; c) addition of one or more stop codons to enhance the termination of transposase synthesis; and/or, d) addition of an effective polyA sequence operably-linked to the transposase to further enhance expression of the transposase gene. In some embodiments, the effective polyA sequence is an avian optimized polyA sequence.

Please replace the first full paragraph on page 18 with the following amended paragraph.

The transposon-based vectors of the present invention include a transposase gene operably-linked to a first promoter, and a coding sequence for a desired protein or peptide operably-linked to a second promoter, wherein the coding sequence for the desired protein or peptide and its operably-linked promoter are flanked by transposase insertion sequences recognized by the transposase. The transposon-based vector also includes one or more of the following characteristics: a) one or more modified Kozak sequences comprising ACCATG (SEQ ID NO:8) ~~at the~~ 3' ~~end~~ of the first promoter to enhance expression of the transposase; b) modifications of the codons for the first several N-terminal amino acids of the transposase, wherein the third base of each codon was changed to an A or a T without changing the corresponding amino acid; c) addition of one or more stop codons to enhance the termination of transposase

synthesis; and/or, d) addition of an effective polyA sequence operably-linked to the transposase to further enhance expression of the transposase gene. The transposon-based vector may additionally or alternatively include one or more of the following Kozak sequences ~~at the~~ 3' ~~end~~ of any promoter, including the promoter operably-linked to the transposase: ACCATGG (SEQ ID NO:9), AAGATGT (SEQ ID NO:11 ~~10~~), ACGATGA (SEQ ID NO:12 ~~11~~), AAGATGG (SEQ ID NO:13 ~~12~~), GACATGA (SEQ ID NO:14 ~~13~~), ~~ACCATGA (SEQ ID NO:14)~~, and ACCATGA (SEQ ID NO:15), ACCATGT (SEQ ID NO:16). In another embodiment, the transposon-based vector comprises an avian optimized polyA sequence and does not comprise a modified Kozak sequence.

Please replace the first full paragraph on page 19 with the following amended paragraph.

In a further embodiment of the present invention, the transposase found in the transposase-based vector is an altered target site (ATS) transposase and the insertion sequences are those recognized by the ATS transposase. However, the transposase located in the transposase-based vectors is not limited to a modified ATS transposase and can be derived from any transposase. Transposases known in the prior art include those found in AC7, Tn5SEQ1, Tn916, Tn951, Tn1721, Tn 2410, Tn1681, Tn1, Tn2, Tn3, Tn4, Tn5, Tn6, Tn9, Tn10, Tn30, Tn101, Tn903, Tn501, Tn1000 ($\gamma\delta$), Tn1681, Tn2901, AC transposons, Mp transposons, Spm transposons, En transposons, Dotted transposons, Mu transposons, Ds transposons, dSpm transposons and I transposons. According to the present invention, these transposases and their regulatory sequences are modified for improved functioning as follows: a) the addition one or more modified Kozak sequences comprising ACCATG (SEQ ID NO:8) ~~at the~~ 3' ~~end~~ of the promoter operably-linked to the transposase; b) a change of the codons for the first several amino acids of the transposase, wherein the third base of each codon was changed to an A or a T without changing the corresponding amino acid; c) the addition of one or more stop codons to enhance the termination of transposase synthesis; and/or, d) the addition of an effective polyA sequence operably-linked to the transposase to further enhance expression of the transposase gene.

Please replace the paragraph that begins on the bottom of page 36 and ends on page 37 with the following amended paragraph.

Another non-limiting list of the antibodies that may be produced using the present invention is provided in product catalogs of companies such as Phoenix Pharmaceuticals, Inc. (~~www.phoenixpeptide.com;~~ 530 Harbor Boulevard, Belmont, CA), Peninsula Labs (San Carlos CA), SIGMA (St. Louis, MO ~~www.sigma-aldrich.com~~), Cappel ICN (Irvine, California~~, www.icnbiomed.com~~), and Calbiochem (La Jolla, California~~, www.calbiochem.com~~), which are all available electronically via the internet and which are incorporated herein by reference in their entirety. The polynucleotide sequences encoding these antibodies may be obtained from the scientific literature, from patents, and from databases such as GenBank. Alternatively, one of ordinary skill in the art may design the polynucleotide sequence to be incorporated into the genome by choosing the codons that encode for each amino acid in the desired antibody. Antibodies made by the transgenic animals of the present invention include antibodies that may be used as therapeutic reagents, for example in cancer immunotherapy against specific antigens. Some of these antibodies include, but are not limited to, antibodies which bind the following ligands: adrenomedulin, amylin, calcitonin, amyloid, calcitonin gene-related peptide, cholecystokinin, gastrin, gastric inhibitory peptide, gastrin releasing peptide, interleukin, interferon, cortistatin, somatostatin, endothelin, sarafotoxin, glucagon, glucagon-like peptide, insulin, atrial natriuretic peptide, BNP, CNP, neurokinin, substance P, leptin, neuropeptide Y, melanin concentrating hormone, melanocyte stimulating hormone, orphanin, endorphin, dynorphin, enkephalin, enkephalin, leumorphin, peptide F, PACAP, PACAP-related peptide, parathyroid hormone, urocortin, corticotrophin releasing hormone, PHM, PHI, vasoactive intestinal polypeptide, secretin, ACTH, angiotensin, angiostatin, bombesin, endostatin, bradykinin, FMRF amide, galanin, gonadotropin releasing hormone (GnRH) associated peptide, GnRH, growth hormone releasing hormone, inhibin, granulocyte-macrophage colony stimulating factor (GM-CSF), motilin, neurotensin, oxytocin, vasopressin, osteocalcin, pancreastatin, pancreatic polypeptide, peptide YY, proopiomelanocortin, transforming growth factor, vascular endothelial growth factor, vesicular monoamine transporter, vesicular acetylcholine transporter, ghrelin, NPW, NPB, C3d, prokinetican, thyroid stimulating hormone, luteinizing hormone, follicle

stimulating hormone, prolactin, growth hormone, beta-lipotropin, melatonin, kallikriens, kinins, prostaglandins, erythropoietin, p146 (SEQ ID NO:30 amino acid sequence, SEQ ID NO:31, nucleotide sequence), estrogen, testosterone, corticosteroids, mineralocorticoids, thyroid hormone, thymic hormones, connective tissue proteins, nuclear proteins, actin, avidin, activin, agrin, albumin, and prohormones, propeptides, splice variants, fragments and analogs thereof.

Please replace the paragraph that begins on the bottom of page 41 and ends on page 42 with the following amended paragraph.

A non-limiting list of the peptides and proteins that may be made may be made through the use of the gene therapy methods of the present invention is provided in product catalogs (electronically available over the internet) of companies such as Phoenix Pharmaceuticals, Inc. (~~www.phoenixpeptide.com;~~ 530 Harbor Boulevard, Belmont, CA), Peninsula Labs (San Carlos CA), SIGMA, (St. Louis, MO ~~www.sigma-aldrich.com~~), Cappel ICN (Irvine, California~~, www.icnbiomed.com~~), and Calbiochem (La Jolla, California~~, www.calbiochem.com~~). The polynucleotide sequences encoding these proteins and peptides of interest may be obtained from the scientific literature, from patents, and from databases, such as GenBank. Alternatively, one of ordinary skill in the art may design the polynucleotide sequence to be incorporated into the genome by choosing the codons that encode for each amino acid in the desired protein or peptide.

Please replace the sixth full paragraph on page 70 with the following amended paragraph.

Base pairs 1780-1785 are the Kozak sequence of SEQ ID NO: 8, and base pairs 1783-2987 [[1780 – 2987]] are the coding sequence for the transposase, modified from Tn10 (GenBank accession J01829) by optimizing codons for stability of the transposase mRNA and for the expression of protein. More specifically, in each of the codons for the first ten amino acids of the transposase, G or C was changed to A or T when such a substitution would not alter the amino acid that was encoded.